SERVICE MANUAL
for
SCOPE METER

S2480_E040404_R01

Programmable
Handy Scope Series

LIMITED WARRANTY & LIMITATION OF LIABILITY

Each Seintek product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is one year and begins on the date of shipment. Parts, product repairs and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Seintek authorized reseller, and does not apply disposable batteries or to any product which, in Seintek's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling. Seintek warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Seintek does not warrant that software will be error free or operate without interruption.

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1. Introduction and Specifications

1.1. Main Features

This Programmable Universal Scope Meter offers enhanced features that similar type test instruments on the market today don't have. All the functions are designed to be very convenient to use. You can quickly get used to working with this METER and the great many functions integrated inside. This instrument features:

1. RS-232C interface for transferring measurement data and waveform.
2. Dual Channel and Auto Calibration.
3. Automatic setting for horizontal and vertical division.
4. DC to 5MHz(2405, 2505), 1MHz(2401, 2800) oscilloscope band width.
5. Built-in auto ranging True-RMS digital MultiMeter
6. Auto ranging
7. Data hold and run mode.
8. Back light display and Low battery indication.
9. Display Type: Super-Twist 132 x 128 pixels.
10. Designed to comply with safety standard for UL3111, CSA C22.2 No.1010-1

1.2. Unpacking the Test Tool Kit

The following items are included in your test tool kit.

Note
When new, the rechargeable Ni-MH battery pack is not fully charged.

■ STANDARD

Description	S2401	S2405	S2505	S2800
Scope Meter	●	●	●	●
Ni-MH Battery Pack (installed)	●	●	●	●
Rechargeable Adaptor	●	●	●	●
Test Leads & Alligator Clips (2)	●	●	●	●
Users Manual	●	●	●	●
Rubber Holster				●
Carrying case				●
RS-232 S/W & Cable				●

■ OPTION

Description	S2401	S2405	S2505	S2800
Rubber Holster	●	●	●	
Carrying case	●	●	●	
RS-232 S/W & Cable	●	●	●	
Inductive Pickup				●
Capacitance Pickup				●
Secondary Adaptor				●

Note:
The accessories may be changed to improve the product quality without notifying the customers.

1.3. Specification

1.3.1. General Specifications

1) Operational Temperature:
   0°C to +50°C (+32°F to +122°F) at a relative humidity 75% or less

2) Storage Temperature:
   -20°C to +60°C with a relative humidity of 75% less

3) Temperature Coefficient:
   0.1 x (Specified Accuracy) per °C for temperature <18°C to >28°C

4) Max. Voltage between any Input and Ground: DC or AC 600Vrms

5) Basic DC Accuracy: 0.3%

6) Band width: 5MHz(2405, 2505), 1MHz(2401, 2800)

7) Meter AC Band width: 20kHz

8) Power Supply: Ni-MH Battery 4.8V (1.2V x 4 cell)

9) Battery Life Time:
   4 Hours without Backlight on,
   3 Hours with Backlight on.

10) Battery Change Time: About 3 Hours

11) Battery Change:
   Class-2 transformer,
   Input: 120V AC 60Hz or 240V AC 60Hz
   Output: 9V DC 1A

12) Display Type: Super-Twist 132 x 128 pixels

13) Equipment Dimensions:
   90 mm (width) x 195 mm (depth) x 40 mm (height)

14) Equipment Weight: About 460g

1.3.2. Technical Specification

1) Oscilloscope Function

(1) Horizontal

Sample Rate	25 MS/s (Dual CH mode) 50 MS/s (Single CH mode)
Record Length	512 single shot, 256 in all modes
Sample / Division	25
Modes	Single shot, Roll, Normal
Accuracy	0.01%
Sweep Rate	1uS to 5S in 1, 2, 5 sequence

(2) Vertical

Bandwidth		1MHz
Resolution		8 Bit
Channels		Dual
Coupling		AC, DC
Input impedance		1 MΩ
Accuracy		3%
Max. Input Volts		DC or AC 600Vrms
Volt / Division	2401, 2800	0.5V to 500V in 1, 2, 5 sequence
	2405, 2505	50mV to 500V in 1, 2, 5 sequence

(3) Triggering

Type	CHA, CHB, External
Coupling	AC, DC
Slope	Rising (↑) or Falling (↓) edge
Internal Trigger Sensitivity	2 / 20 Division

(4) Waveform Memory

Waveform Memory	2800	8 Shots
	Others	16 Shots
REF Wave From Memory		45 Shots (Only S2800)

2) Digital MultiMeter Function

DC V

Range	Resolution	Accuracy	Impedance
5V	0.001V	±(0.3%+3)	1 MΩ
50V	0.01V		
500V	0.1V	±(0.5%+5)	
1000V	1V		

AC V

Range	Resolution	Accuracy			Impedance
		50~450Hz	0.45k~5kHz	5k~20kHz	
3V	0.001V	±(0.75%+5)	±(2%+5)	±(2.5%+5)	1 MΩ
30V	0.01V				
300V	0.1V				
750V	1V			N/A	

OHM

Range	Resolution	Accuracy	Over Load Protection
5 kΩ	0.001 kΩ	±(0.5%+5)	600V DC or AC rms
50 kΩ	0.01 kΩ		
500 kΩ	0.1 kΩ		
5 MΩ	0.001 MΩ	±(0.75%+10)	

Continuity Buzzer

Test Voltage	Threshold	Over Load Protection
1.7V	100 digits	600V DC or AC rms

Frequency

Range	Resolution	Accuracy	Overload protection
100 Hz	0.01 Hz	±(0.05%+5)	600V DC or AC rms
1 kHz	0.0001 kHz		
10 kHz	0.001kHz		
100 kHz	0.01kHz		
1 MHz	0.0001MHz		
10 MHz (2405)	0.001MHz		

The guaranteed range is below 5 MHz.

RPM (S2401, S2405, S2505)

Range	Resolution	Accuracy
240 - 60,000	1 RPM	±(0.05%+5)

Pulse Width (S2401, S2405, S2505)

Range
2uS-500mS (Pulse Width > 2uS)

% Duty (S2401, S2405, S2505)

Range
25% - 75%

Only S2800

Function	Range	Resolution	Accuracy
RPM	120 - 12,000	1RPM	± 2RPM
% Duty	1% - 98%		
Dwell	3.6° - 352.8°		
Pulse Width	2 uS - 450 mS (Pulse Width > 2 uS)		
Frequency	2Hz - 1MHz		

2. General Maintenance

2.1. Introduction

This provides handling, cleaning, battery replacement, disassembly, and assembly instructions.

2.2. Warranty Repairs and Shipping Information

If your meter is still under warranty, see the warranty information at the front of this manual for instructions on returning the unit.

2.3. Static Safe Handling

Observe the following rules for handling static-sensitive devices:

1. Handle all static-sensitive components at a static-safe work area. Use grounded static control table mats on all repair benches, and always wear a grounded wrist strap. Handle boards by their nonconductive edges only. Store plastic, vinyl, and Styrofoam objects outside the work area.
2. Store and transport all static-sensitive components and assemblies in static shielding bags or containers.
   Static shielding bags and containers protect components and assemblies from direct static discharge and external static fields. Store components in their original packages until they are ready for use.

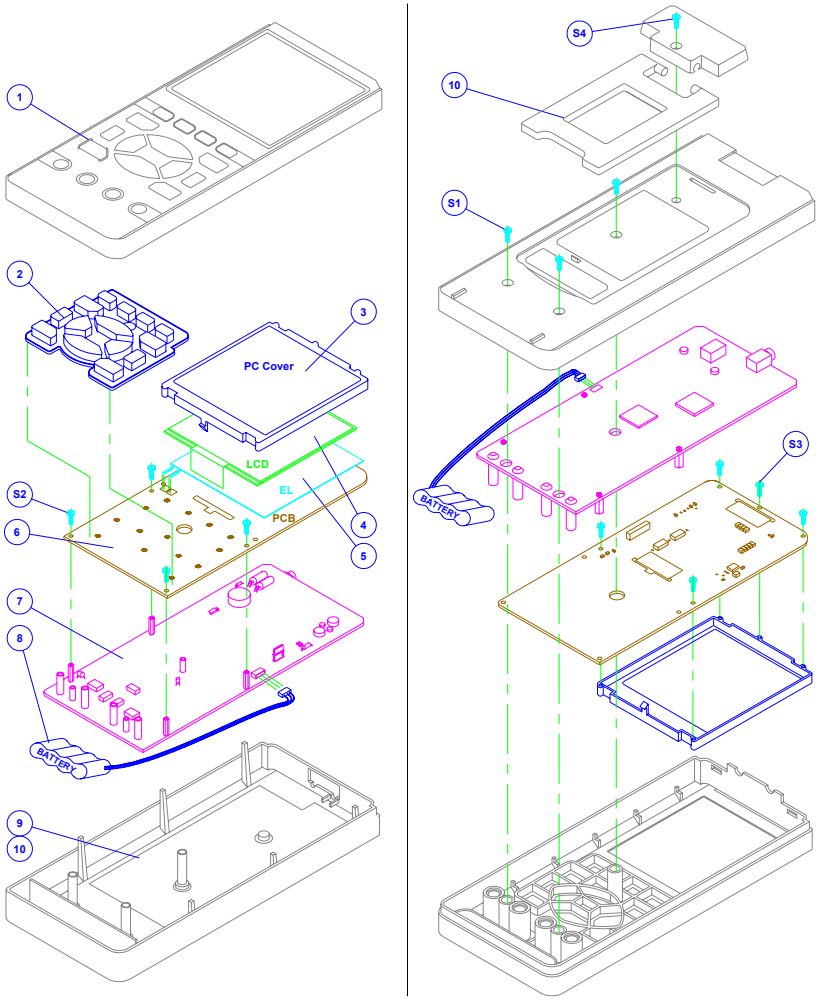
2.4. Cleaning

Warning
To avoid electrical shock or damage to the meter, never allow water inside the case. To avoid damaging the meter's housing, never apply solvents to the meter.

If the meter requires cleaning, wipe it down with a cloth that is lightly dampened with water or a mild detergent. Do not use aromatic hydrocarbons, chlorinated solvents, or methanol-based fluids when wiping the meter.

2.5. Disassembly Procedures

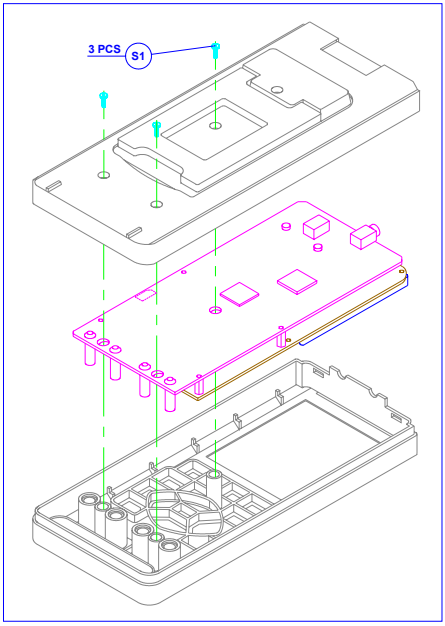
The following paragraphs describe disassembly of the Meter in sequence (from the fully assembled meter to the Sub-assembly.) Start and end your disassembly at the appropriate heading levels.



Disassembly

No	Description	Q'ty
1	Top Case	1Pcs
2	Rubber Button	1Pcs
3	LCD Cover	1Pcs
4	LCD	1Pcs
5	EL	1Pcs
6	SUB PCB Assembly	1 Set
7	Main PCB Assembly	1 Set
8	Battery Pack	1Pcs
9	Bottom Case	1Pcs
10	Stand Top & Bottom	1Pcs
S1	Screw for Top and Bottom case	3Pcs
S2	Screw for Sub and Main PCB	4Pcs and 4Pcs
S3	Screw for LCD Cover	5Pcs
S4	Screw for Stand	1Pcs

2.5.1. Remove the Meter Case



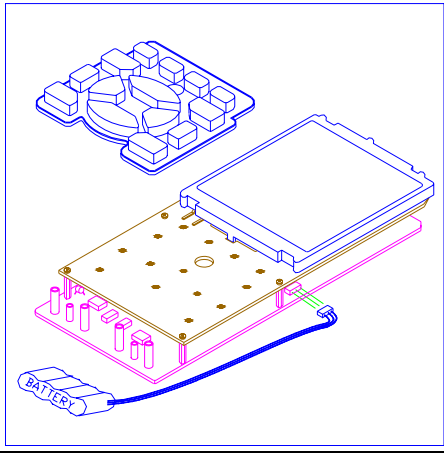
Use the following procedure to remove the meter case.

① **Power OFF**
Make sure the meter is turned off and unplugged from the power Adaptor.

② **Remove Screw**:
Remove the three screw from the bottom of the case. (3 Pcs)

③ **Remove the PCB Ass'y**:
Now remove the PCB Assembly by releasing the four snap retainers securing it to the case.

2.5.2. Remove Rubber button and Battery Pack

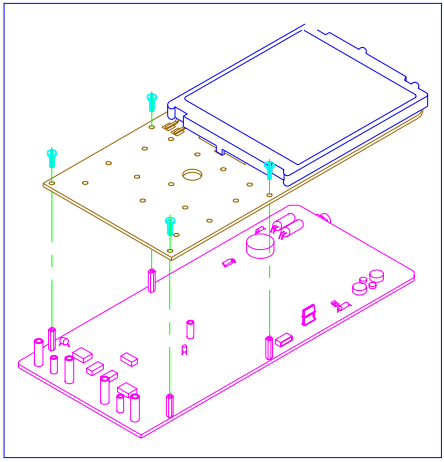


Rotate the PCB Assembly 180 degrees.

① **Remove Rubber Button**:

② **Remove Battery Pack**:
Remove the battery plug from the connector

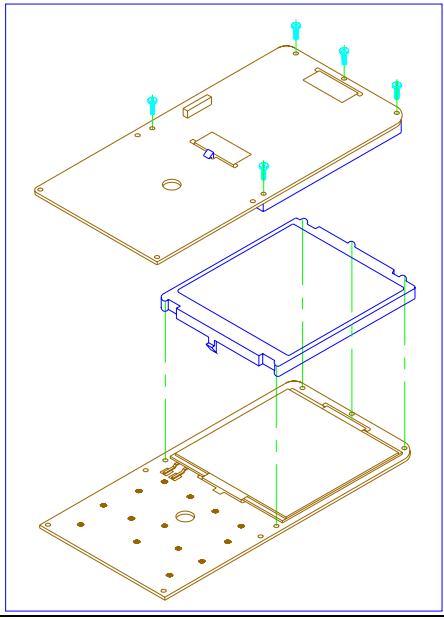
2.5.3. Separate SUB and Main PCB Assembly



① **Remove Screw**:
Remove the four screw from the Sub PCB assembly. (4 Pcs)

② **Separate PCB**:
The SUB PCB Assembly can now be lifted away from the Main PCB Assembly.

2.5.4. Remove LCD Cover



① **Remove screw**:
Remove the five screw for LCD cover. (5 Pcs)

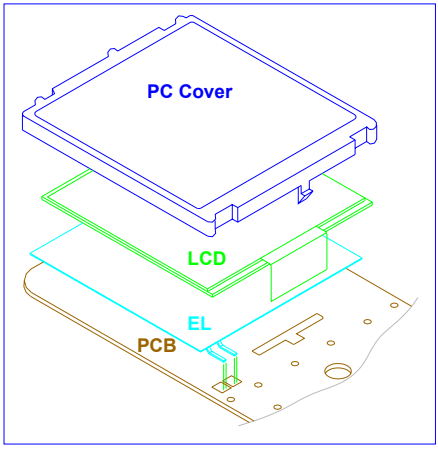
② **Rotate the Sub PCB**:
Rotate the SUB PCB Assembly 180 degrees.

③ **Remove LCD Cover**:
The LCD Cover can now be lifted away from the SUB PCB Assembly.

2.6. Assembly Procedures

Generally, assembly procedures follow a reverse sequence of disassembly procedures. As some differences do apply, assembly is described separately in the following paragraphs. Begin assembly at the appropriate level, as defined by the heading. References are made to items in below Figure for assembly details of standard meter parts.

2.6.1. Layout for LCD Assembly



① **LCD Cover**:

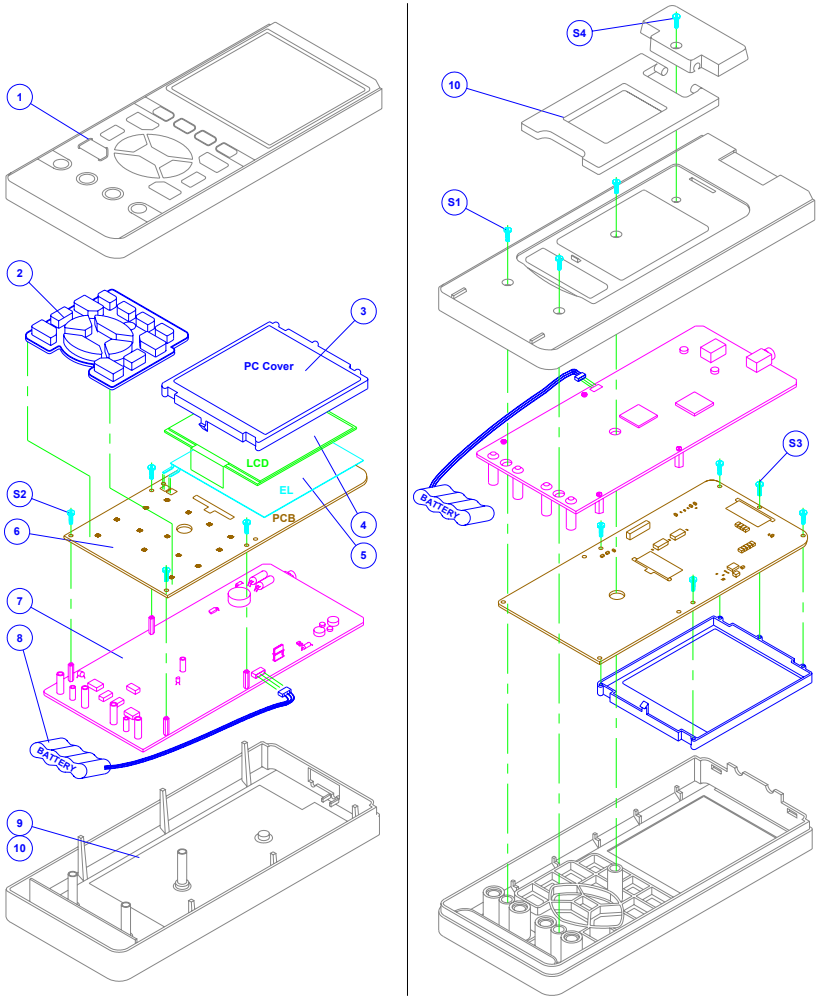
② **LCD**:

③ **EL**:

④ **SUB PCB**

We recommend that do not remove LCD from SUB PCB.

2.6.2. Layout for Scope Assembly



Assembly

3. Performance Testing

3.1. Introduction

This chapter of the Service Manual provides performance tests that can be used at any time to verify the meter operation within published specifications. A complete calibration procedure is also included. The performance test and, if necessary, the calibration procedure can be performed periodically and after service or repair.

3.2. Required Test Equipment

The following equipment, or a suitable equivalent, is required for performance testing and calibration:

Description	Minimum requirements	Examples
Multifunction Calibrator	Refer to 4808 specification	4808
Multifunction Calibrator	Refer to 9100 specification	9100
Arbitrary function generator	Refer to HC9302 specification	HC930
Function generator	Refer to G5100 specification	G5100
Power supply	Refer to P6100 specification	P6100
Resistance calibrator		
Tool for a short circuit test		
To test current and voltage		
Personal Computer	IBM computer	

3.3. Performance Tests

The following performance tests are provided to ensure that the meter is in proper operating condition.

3.3.1. Scope center Tests

1. Turn off the equipment and turn on the equipment.
2. Move to DCV (Press **FUNC**, **F1** and then select **DCV**; then press **F3**, **F4**, **F4**).
3. Press DIV button; then press the **F1**, →, **F2**, →, **F3** and → button to change of **A/Div**,. **B/Div** and **H/Div** to **AUTO** mode.

4. Verify scope center as changing **V/DIV** (0.5mV~500V) of CHA, B by pressing up and down arrow buttons.

3.3.2. DCV Tests

1. Press **DIV** button and change **V/DIV** to **AUTO** by pressing left or right arrow button.
2. Press **F3** (H/DIV) button and change **H/DIV** to **AUTO** by pressing left or right arrow button.
3. Apply **DC 700V** to equipment and verify that measurement value is in guaranteed specification.
4. Change of **V/DIV** range to **100V** by pressing up and down arrow button.
5. Apply DC 100V to equipment and verify that the waveform displays DC 100V correctly.
6. Verify 10V, 1V and 100mV (Only S2405, S2505) as described above.

3.3.3. ACV Tests

1. Press **FUNC** button; then press **F1** (Scope) button.
2. Select **ACV** of MEASUREMENTS A; then press **F3**, **F4** and **F4**.
3. Press **DIV** button and change V/DIV to AUTO mode by pressing right or left arrow button.
4. Press **F3** (H/DIV) button and change H/DIV to AUTO mode by pressing right or left arrow button.
5. Apply AC 700V/60Hz and verify that measurement value is in guaranteed specification.
6. Apply AC 100V/60Hz and verify that measurement value is in guaranteed specification.
7. Apply AC 10V/60Hz and verify that measurement value is in guaranteed specification.
8. Apply AC 1V/60Hz and verify that measurement value is in guaranteed specification.
9. Apply AC 100V/20kHz and verify that measurement value is in guaranteed specification.
10. Apply AC 10V/20kHz and verify that measurement value is in guaranteed specification.
11. Apply AC 1V/20kHz and verify that measurement value is in guaranteed specification.
12. Apply AC 100mV/20kHz.
13. Change V/DIV to100V/DIV

14. Apply 100V/60Hz and verify that the waveform and measurement value are displayed correctly.
15. Verify 10V, 1V, and 100mV (Only S2405, S2505) as described above.

3.3.4. OHM Tests

1. Press **FUNC** button; then press **F1** (Scope) button.
2. Select **OHM** of MEASUREMENT A:. then press **F3**, **F4** and **F4**.
3. Press **F2** (RGE) button and change V/DIV to AUTO by pressing right or left arrow button.
4. Press **F3** (H/DIV) button and change H/DIV to AUTO by pressing right or left arrow button.
5. Apply 1 kΩ to equipment and verify that the measurement value and waveform position are in specification.
6. Apply 10 kΩ to equipment and verify that the measurement value and waveform position are in specification.
7. Apply 100 kΩ to equipment and verify that the measurement value and waveform position are in specification.
8. Apply 1 MΩ to equipment and verify that the measurement value and waveform position are in specification.
9. Apply 4 MΩ to equipment and verify that the measurement value and waveform position are in specification.

3.3.5. Frequency Tests

1. Press **FUNC** button; then press **F1** (Scope) button.
2. Select **Hz** of Measurements A;. then press **F3**, **F4** and **F4**.
3. Apply AC 0.2Vrms/1MHz (S2401, S2800) or 0.2Vrms/5MHz (S2405, S2505) to equipment and verify that the measurement value is correct.
4. Apply AC 2V/100kHz to equipment and verify that the measurement value is correct.

3.3.6. AC/DC Coupling Tests

1. Press **FUNC** button; then press **F1** (Scope) button.
2. Select **AC** of INPUT A, B in SCOPE SETUP; then press **F3**, **F4** and **F4**.
3. Setup the Function Generator (G5100) frequency to 10kHz.
4. Setup the Function Generator (G5100) offset to 5V.
5. Apply Function Generator output (G5100) to CHA and COM connector of equipment and verify that AC Coupling operates

properly.

Note:
AC Coupling is a mode that blocks the DC component of a signal but passes the dynamic (AC) component of the signal. Useful for observing an AC signal that is normally riding on a DC signal.

6. Horizontal zero position will not be changed, even if you change offset value.
7. Press **TRIG** button; then press **F3** (Tmode) button.
8. Select **CHB** in Trigger SOURCE;. then press **F3**, **F4** and **F4**.
9. Move the input signal from CHA to CHB.
10. Verify AC/DC coupling as described above.

3.3.7. External Tests

1. Press **FUNC** button; then press **F1** (Scope) button.
2. Select **Hz** of MEASUREMENT A: ;. then press **F3**, **F4** and **F4**.
3. Press **TRIG** button; then press **F3** (Tmode) button.
4. Select **EXT** in Trigger SOURCE;. then press **F3**, **F4** and **F4**.
5. Apply 1MHz (S2401, S2800) or 5MHz (S2405, S2505) to EXT.TRIG and COM connector and verify that the frequency measurement value is correct.

3.3.8. CHB Tests

1. Press **TRIG** button; then press **F3** (Tmode) button.
2. Select **CHB** in Trigger SOURCE;. then press **F3**, **F4** and **F4**.
3. Apply AC 700V/5kHz to the equipment and verify that the waveform is displayed correctly.

3.3.9. Duty Tests

1. Press **FUNC** button; then press **F1** (Scope) button.
2. Select **DTY** of Measurements A;. then press **F3**, **F4** and **F4**.
3. Apply DUTY 50%/10ms/+5V to the equipment by using 9100.
4. Verify that the equipment is reading 50% correctly.

3.3.10. Pulse Width Tests

1. Press **FUNC** button; then press **F1** (Scope) button.
2. Select **P/W** of Measurements A;. then press **F3**, **F4** and **F4**.
1. Apply P/W 1ms/10mS/+5V to the equipment by using 9100.
2. Verify that the equipment is reading 1ms correctly.

3.3.11. RS232 Input and Tests

1. Verify that SETUP MENU, LOGO, SERIAL NO., etc is correct.
2. Verify the communication between equipment and computer by using RS232 program.

4. Calibration

4.1. Introduction

The adjustment procedure consists of several steps. Each step requires an external voltage source for new calibration constants. Before performing the adjustment procedure, you must warm up the instrument for at least ten minutes in an ambient temperature between 18˚C and 28˚C.
Adjustments performed prior to warm-up or outside this temperature range may result in poor performance. If all steps in the procedure are completed successfully, the new calibration constants take affect.
The equipment setups are required to complete the adjustment procedure.

4.2. Preparation before Entering Calibration Mode

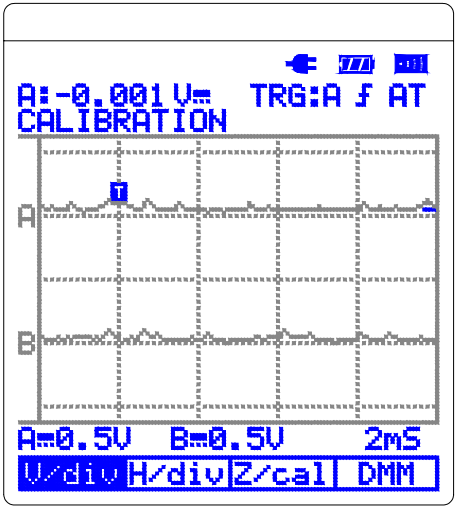
4.2.1. Voltage test

1. Apply 4.5V to the equipment by using power supply (P6100).
2. Check the current consumption of P6100 is approximately 400 mA.
3. Lower the voltage to 4.2V to check low battery indicator on the top-right side of the screen and then the equipment is turned off.
4. Apply power source by using battery and connect the adaptor of the tool to test current and voltage.
5. Check the current consumption is 400 mA.
6. Check the voltage sensor of the charging circuit is operating by shorting +5V power source of D17 and left node of R82. When you short them, current consumption drops from 400mA to 30mA.
7. Check the temperature sensor of the charging circuit is operating by shorting both node of R82. When you short them, current consumption drops from 400mA to 30mA.
8. Check the adaptor indicator on the screen disappears when you remove the adaptor.

4.2.2. Setting for RS232C

1. Run RS232 setup program.
2. Setup Baud Rate, Com port.
3. Enter the setup, logo and number into the equipment by running the program.

4.3. Entering Calibration Mode



① With retaining F1, FUNC buttons pressed, press I/O button.

② Examine the screen status and buttons function.

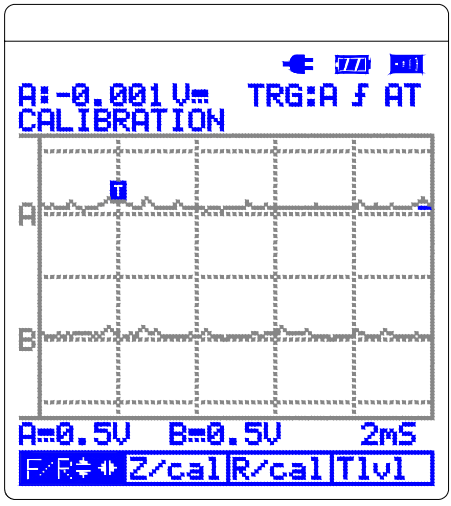
Key: F1, F4, FUNC + I/O Simultaneously.

4.4. Calibration Scope Center

1. Connect the tool for a short circuit test to CHA, CHB, and COM connector of the equipment.
2. Adjust Scope center for each V/DIV. You can change V/DIV by pressing up-down arrow buttons of the equipment. (V/DIV of CHA, CHB will be changed simultaneously when you adjust them.)
3. Move to 0.5V/DIV.
4. Scope center would be adjusted by pressing F3 button (Z/cal.). If the equipment still do not display scope center correctly, press F3 (Z/cal.) continuously until the equipment displays the correct scope center.
5. Adjust the scope center of 50mV, 0.1V, 0.2V, 0.5V, 1V, 2V, 5V, 10V, 20V, 50V, 100V, 200V, 500V as described above. (50mV, 0.1V, 0.2V is only S2405, S2505)

4.5. Calibration zero point of DMM function

1. Move to DMM function adjustment mode by pressing F4 (DMM) button.



① **F/R**:
Function & Range-

② **Z/cal:**
ZERO Calibration

③ **R/cal:**
Reading Calibration

④ **Tlvl**:
Trigger Level

DMM Function Calibration Mode

2. Up and down arrow buttons adjust FUN. Right and left buttons adjust V/RANGE.
3. Connect the tool for a short circuit test.
4. Move to 0.2V range of DCV.
5. Wait until figures stabilize.
6. Adjust zero point of equipment by pressing F2 (Z/cal.) button.
7. Adjust zero point of 2V, 20V, 200V range as described above.

4.5.1. DC Volts Calibration

1. Change to function **DCV** by pressing up or down arrow button.
2. Change to Range **200V** by pressing left or right arrow button.
3. Apply **DC 200V** to equipment; Allow for settling; then press F3(R/cal) button. This step will take approximately 5 seconds.
4. Apply **20V**, **2V**, and **0.2V** (S2405, S2505) as described above.

4.5.2. AC Volts Calibration

1. Change to function **ACV** by pressing up or down arrow button.
2. Change to Range **200V** by pressing left or right arrow button.
3. Apply **AC 199.5V**, **60Hz** to equipment; Allow for settling; then press F3(R/cal) button.
4. Apply **20V**, **2V**, and **0.2V**(S2405, S2505), **60Hz** as described above.

4.5.3. Ohms Calibration

1. Short the test lead ends together.
2. Record the reading (system resistance) shown on the meter.
3. Change to function **OHM** by pressing up or down arrow button.
4. Change to Range **2kΩ** by pressing left or right arrow button.
5. Apply **2kΩ** to equipment; Allow for settling; then press F3(R/cal) button.
6. Apply **20kΩ**, **200kΩ**, and **2MΩ** as described above.

4.5.4. Frequency Calibration

1. Change to function **Hz** by pressing up or down arrow button.
2. Apply AC 0.2V, 1MHz to equipment; Allow for settling; then press F3(R/cal) button.
3. If the measurement value is not correct, adjust by up or down arrow button after press F4 (Tlvl).

4.6. Exiting Calibration Mode

Calibration mode can be exited at any time by pressing the I/O button (Power off).

5. List of Replaceable Parts

5.1. Introduction

This chapter contains an illustrated list of replaceable parts for the Seintek Handy Scope meter. Parts are listed by assembly; alphabetized by reference designator. Each assembly is accompanied by an illustration showing the location of each part and its reference designator. The parts lists give the following information:

1. Reference designator
2. An indication if the part is subject to damage by static discharge
3. Description
4. Seintek stock number
5. Total quantity
6. Any special notes (i.e., factory-selected part)

Caution
A * symbol indicates a device that may be damaged by static discharge.

5.2. How to Obtain Parts

Electrical components may be ordered directly from the manufacturer by using the manufacturers part number, or from the Seintek and its authorized representatives by using the part number under the heading SEINTEK STOCK NO.
Parts price information is available from the Seintek or its representatives.
Prices are also available in a Seintek Replacement Parts Catalog which is available on request.
In the event that the part ordered has been replaced by a new or improved part, the replacement will be accompanied by an explanatory note and installation instructions, if necessary.
To ensure prompt delivery of the correct part, include the following information when you place an order:

1. Instrument model and serial number
2. Part number and revision level of the pca containing the part.
3. Reference designator
4. Fluke stock number

5. Description (as given under the DESCRIPTION heading)
6. Quantity

5.3. How to Contact Seintek

To contact Seintek, visit Seintek's web site at www.seintek.com or call one of the following telephone numbers:
Korea: +82-31-914-2381

5.4. Newer Instruments

Changes and improvements made to the instrument are identified by incrementing the revision letter marked on the affected PCB. These changes are documented on a manual supplement which, when applicable, is included with the manual.

5.5. Parts

The following pages give detailed listings of Seintek Handy Scope meter.

Note

This instrument may contain a NI-MH battery. Do not mix with the solid waste stream. Spent batteries should be disposed of by a qualified recycler or hazardous materials handler.

6. Schematic Diagrams

6.1. S2401 & S2800

6.1.1. Main PCB Assembly

6.1.2. SUB PCB Assembly

6.1.3. Analog

6.1.4. Digital

6.1.5. Channel A

6.1.6. Channel B

6.2. S2405 & S2505

6.2.1. Main PCB Assembly

6.2.2. SUB PCB Assembly

6.2.3. Analog

6.2.4. Digital

6.2.5. Channel A

6.2.6. Channel B

7. Troubleshooting

7.1. Introduction

This chapter describes trobleshooting procedures than can be used to isolate problems with the meter.

Warning
Opening the case may expose hazardous voltages. Always disconnect the power cord and measuring inputs before opening the case. And remember that repairs or servicing should be performed only by qualified personnel.

Caution
Handle the PCB Assembly by its edges or while wearing gloves; avoid contaminating the PCB Assembly with oil from tour fingers.
A contaminated PCB Assembly may not cause immediate instrument failure in controlled environments. Failures typically show up when contaminated units are operated in humid areas.

7.2. Troubleshooting guide

If you experience trouble with your instrument, try these corrective actions before concluding that the instrument needs repair.

1. Make sure you are using fresh NI-MH battery pack or fully charged rechargeable battery pack. If you are using the AC/DC power adapter, make sure the adapter is plugged into an appropriate live power source.

2. If the buttons do not respond to your control or the contrast is set such that the display is unreadable, remove the power source while the instrument is on. Wait 15 minutes and then restore power and try operations.

3. If you still experience difficulty, check your connections and reread the usage instructions.

4. If meter is frozen while you control the trigger level:

If you set the trigger level to normal (NOR) mode, trigger level must be the same level of waveform. Meter does not trigger if trigger level set above or below waveform.

If you set the trigger level to Auto (AT) mode, you do not need to control the trigger level.

In rare cases, your instrument may require servicing. There are no user-serviceable parts inside the instrument. For service, return the instrument to your customer service center.

7.3. Starting with a Dead meter

When you turn the Meter on, the display normally shows input connections necessary for the function selected, then proceeds to a display mode appropriate for that function.

A display that does not come on at all can be caused by a problem in one or moreof several areas. These areas are discussed in the following paragraphs.

7.4. Can not install the software

7.4.1. Check the H/W and S/W requirement:

1) IBM PC/XT/AT or Compatible Computer.
2) Microsoft Windows 3.1, 95, 98, 2000, XP or WINNT.
3) Serial Port for Connection with Instrument.

7.4.2. Error - Could not copy file….

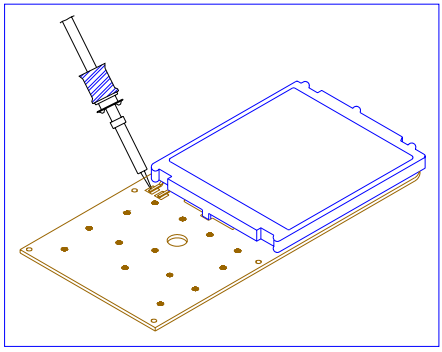
If message display "**Error - Could not copy file : SETUP1.EX_ →C:\WINDOWS (or WINNT)\setup1.exe**", please deletion of "WINDOWS (or WINNT)\setup1.exe" file and reinstall.

7.5. The back light is not working

When the back light is not working although the symbol is on the screen.

To remove the Meter Case, refer to procedures chapter 2.5.1 to 2.5.3.

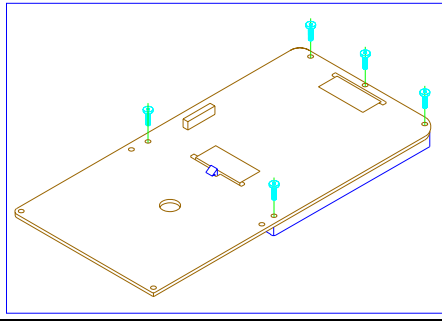
7.5.1. Desoldering from EL terminal



① **Desoldering**:
Desoldering EL terminal (2 points).

② Rotate the PCB Assembly 180 degrees.

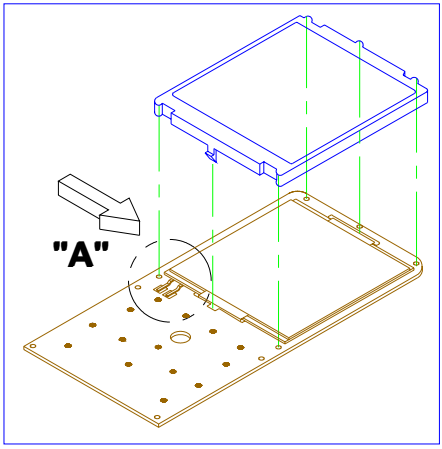
7.5.2. Remove screw for LCD cover



① **Remove Screw**:
Remove the five screw for LCD cover. (5 Pcs)

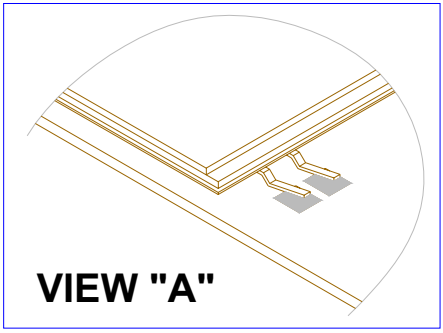
② Rotate the PCB Assembly 180 degrees.

7.5.3. Remove LCD cover



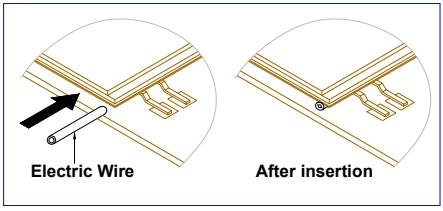
① **Remove LCD Cover**:
The LCD Cover can now be lifted away from the SUB PCB Assembly.

7.5.4. Detail for EL terminal



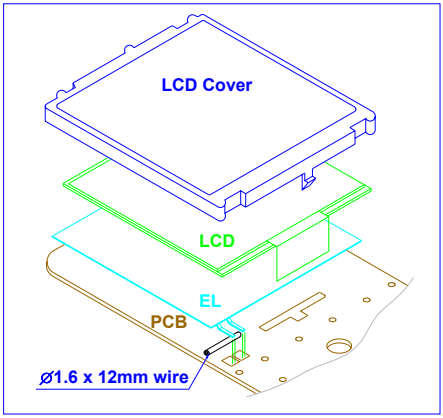
① **EL terminal**:
After desoldering EL terminal

7.5.5. Insert electric wire between PCB and EL



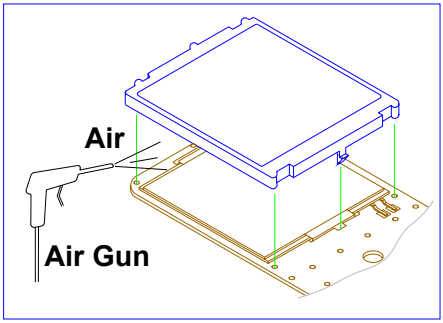
① **Insert electric wire**:
Insert electric wire (About Ø1.6 x 12mm) between PCB and EL.

7.5.6. Layout for LCD Assembly



① **Layout for LCD**:
LCD Cover, LCD, EL, Electric Wire (to be inserted) and PCB

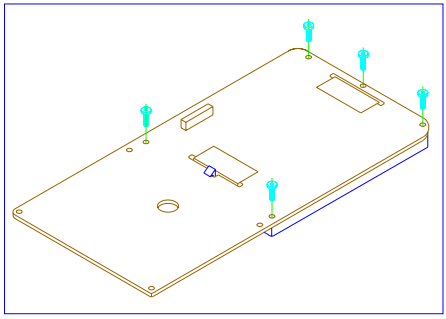
7.5.7. Install LCD cover



① **Caution**
Clean the LCD and Cover with deionized air and, if necessary, isopropyl alcohol. Then gently snap the Cover into the SUB PCB tabs.

② **Install LCD cover**:

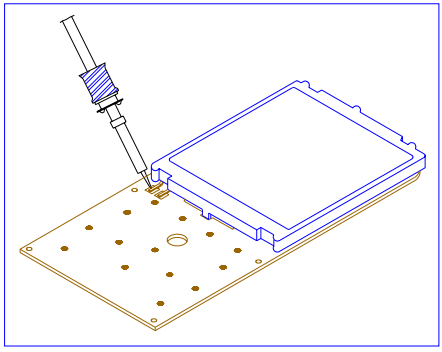
7.5.8. Install screw for LCD cover



① **Rotate the Sub PCB**:
Rotate the SUB PCB Assembly 180 degrees.

② **Install Screw**:
Install the five screw for LCD cover

7.5.9. Soldering of EL terminal



① **Rotate the Sub PCB**:
Rotate the SUB PCB Assembly 180 degrees.

② **Soldering**:
Soldering EL terminal. (2 points).

7.5.10. Reassembly

Generally, reassembly reverses the disassembly procedure.

MEMO

MEMO

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